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Author(s): Richard W. Stoffle, David B. Halmo, Michael J. Evans, John E. Olmsted

Source: *American Anthropologist*, New Series, Vol. 92, No. 2 (Jun., 1990), pp. 416-432

Published by: [Blackwell Publishing](#) on behalf of the [American Anthropological Association](#)

Stable URL: <http://www.jstor.org/stable/680153>

Accessed: 04/05/2011 18:13

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RICHARD W. STOFFLE
DAVID B. HALMO
University of Michigan

MICHAEL J. EVANS
University of Florida

JOHN E. OLMSTED
University of Michigan

Calculating the Cultural Significance of American Indian Plants: Paiute and Shoshone Ethnobotany at Yucca Mountain, Nevada

Ethnobotanical studies are of interest to ethnographers, ethnobotanists, and cultural historians who study the prehistoric, historic, and contemporary contribution of plants to the sociocultural adaptations of American Indian people. A critical research issue is evaluating the differential contribution of plants to American Indian adaptive strategies. This article takes the first quantitative plant evaluation model and combines it with field data from the Yucca Mountain, Nevada, ethnobotany study to explore the utility of this model for evaluating the cultural significance of botanical resources to contemporary American Indian peoples.

ETHNOBOTANICAL STUDIES OF THE RELATIONSHIPS between indigenous peoples of the Americas and their plant resources have increased in quantity and sophistication in recent years (e.g., Berlin, Breedlove, and Raven 1974; Etkin 1988; Moerman 1986). Studies in Mexico (Alcorn 1984; Halmo 1987) and South America (Posey 1982, 1983, 1984; Posey et al. 1984) have documented extensive indigenous plant knowledge and complex systems of botanical resource management, both of which have great potential for designing sustainable resource development programs for tropical ecosystems. Two North American culture areas have also been the focus of much recent research; the Greater Southwest (Bretting and Nabhan 1986; Bye 1985; Doebley 1984; Dobyns 1988; Felger and Moser 1985; Ford 1985; Nabhan 1985, 1986; Nabhan and de Wet 1984; Nabhan et al. 1981) and northwestern North America.

In the latter region, Nancy Turner and colleagues have made extensive contributions (Turner 1973, 1974, 1975, 1978, 1979, 1987, 1988a; Turner and Bell 1971, 1973; Turner, Bouchard, and Kennedy 1981; Turner and Efrat 1982; Turner et al. 1983), including the identification of little-known useful plant species (Turner and Kuhnlein 1983; Lepofsky, Turner, and Kuhnlein 1985; Kuhnlein and Turner 1986), lexical retention in folk botanical classification (Turner 1987), and the nutritional value of native species (Kuhnlein, Turner, and Kluckner 1982). Using primary and secondary data collected among two interior groups of Salish Indians, Turner developed what is, to our knowledge, the first quantitative model for evaluating the cultural significance of plants (Turner 1988b).

The present analysis is the first effort to apply the Turner model to an alternative ethnobotanical data set, which in this case involves Paiute and Shoshone ethnobotanical

RICHARD W. STOFFLE is Associate Research Scientist at Institute for Social Research, Survey Research Center, University of Michigan, Ann Arbor, MI 48106. DAVID B. HALMO and JOHN E. OLMSTED are also at ISR, University of Michigan. MICHAEL J. EVANS is Affiliate Assistant Professor, Department of Anthropology, University of Florida, 1350 Turlington Hall, Gainesville, FL 32611.

data generated as part of the Yucca Mountain, Nevada, Native American cultural resource assessment study. The analysis (1) describes the ethnobotanical research conducted with American Indian plant experts representing 16 tribes involved in the Yucca Mountain, Nevada, nuclear waste repository siting project; (2) summarizes the Turner model; (3) presents an adaptation of the model that reflects the research requirements of American Indian cultural resource studies; and (4) applies the model using the Yucca Mountain data set.

Yucca Mountain Ethnobotany Study

In the United States today, American Indian people participate in the assessment of how proposed development projects can affect traditional cultural resources. This participation is driven by the American Indian Religious Freedom Act of 1978 (92 Stat. 469; White 1980); the Council of Environmental Quality update of the National Environmental Policy Act (Federal Register 1978); federal agency regulations (Federal Agencies Task Force 1979; Sharples and Salk 1988), and administrative guidelines (Advisory Council on Historic Preservation 1985). Because most studies have occurred since 1978, Indian people and anthropologists who participate in the research are still seeking ways to adapt traditional cultural perceptions and ethnographic research methods to the policy requirements of the environmental impact assessment process. Plants generally are the most difficult cultural resources to protect; but see Lerner (1987) and Peri, Patterson, and Good-